E. E. Bowles

Anniston

C. K. Eastman
W. H. Hunter
[illegible]. J. Koenig
J. C. Landwehr
A. E. Leisy
G. W. Miller
W. B. Papageorge
W. F. Taffee
H. L. Williams

General Offices

C. E. Anagnostopoulos
J. O. Bright
H. C. Carder
D. E. Cayard
D. Danna (3)
L. C. Fuhrmeister
H. O. Hehner
D. B. Hosmer
R. E. Howard
R. M. Kountz
W. A. Kuhn
C. F. Luecke
H. L. Payton
W. R. Richard
N. L. Sample
A. J. Speziale
[illegible]. A. Stephens
R. J. Stratmeyer
H. S. Trail
J. H. Zwemer

South Second St.

O. DeGarmo
M. E. Gibbs
J. F. Quinn
J. R. Savage - JFQ

Other Locations

D. B. Edwards - DR
J. W. Graves - Luling
W. R. Kellogg - Nitro
G. F. Knollmeyer - Seattle
J. F. White - Everett
[illegible]. F. Wiesenburn - CB
[illegible]. J. Wilson - WGK

Monsanto

Anniston Plant

# TECHNICAL SERVICES DEPARTMENT

## MONTHLY REPORT

### Summary

May 1968

Cost Improvement Results For First 5 Months

| | Estimated Actual | Target | % of Target |
|---|---|---|---|
| Month | $74,400 | $53,000 | 140 |
| YTD | $233,400 | $173,000 | 135 |

Organic Division

Solid Aroclor capacity will be debottlenecked to meet late 1968 and 1969 sales demands by improving yield on 5460 and decreasing the chlorinator batch cycle. A major expansion is needed to meet 1970 forecast sales demands. A progress report is scheduled for June outlining debottlenecking work plans and long range capacity needs.

Biphenyl still debottlenecking has been included in the expansion project (CEA-1892) as undefined scope for $170 M. The Santowax R rectifying column has been ordered with delivery expected in 2 months.

Chlorine - 270 lbs. of Mercury was recovered from the first two drums of floor ditch sludge processed by Interstate Concentrating Company, for a net savings of $1000. TSD is working with corporate legal department on a contract with Interstate.

HCl project AFE 2899 for Staley grade acid was submitted for approval.

PNP capacity bottlenecks determined during 72 hour shift coverage. A progress report outlining steps to further increase capacity will be published in June. May Production was a record 1.93 M lbs.

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Agricultural Division

Optimization of Methyl PCT yields saved $6900 during May. Parathion recovery separator installed on 5/29, water batching has been completed and start-up is in progress. Foundation and sewer work completed on experimental Sulfur removal project, contract for equipment construction will be let in early June. Experimental refractometer pump successfully started up 5/15, chlorination refractive index tests will be started as soon as refractometer light source has been replaced. A project for automatic blending of Methyl Parathion will be forwarded for approval in early June. ($16,000 NFC, $11,000/yr. savings B.T.).

Engineering Design and Services

Storage tanks have been set and steel erection started on CEA 1430. Warehouse foundation poured and office framing started on CEA 1452. Start-up budget for 1430 forwarded for approval 5/28. Start-up budget for 1452 will be forwarded by 6/22.

Safety Review on Waste Heat Recovery modifications held 5/9, field work on modifications started 5/28. Targets for phase III tests will be set in St. Louis on 6/7 during review with C.E.D.

Projects were prepared for Upgrading Loading Docks in Inorganic and AG departments. A.F.E.'s will be submitted in June. Utility maps for Plant Emergency Plan were completed. Drafting was completed for 6 Projects.

Pollution Control

Drafting on project to install solids filter at waste treatment will start in June. Arrangements made to conduct Malathion waste tests at plant this summer. Began checking C.O.D. and organics level in Snow Creek for C.E.D. evaluation of secondary treatment requirements. Two odor complaints, no water pollution complaints in May.

Quality Control

RFT Index was 98.0, with 14 lots rejected out of 685; 12 out of 563 from Organic Division. May Quality Score was 98.2, up 3.2 from April, YTD 96.9 vs 95.0 target. A new surveillance chart was instituted to monitor Santowax R quality and correlate Aroclor results back to Santowax and Biphenyl variables.

DC Malm for J. C. Landwehr

J. C. Landwehr
Technical Services Superintendent

:kd

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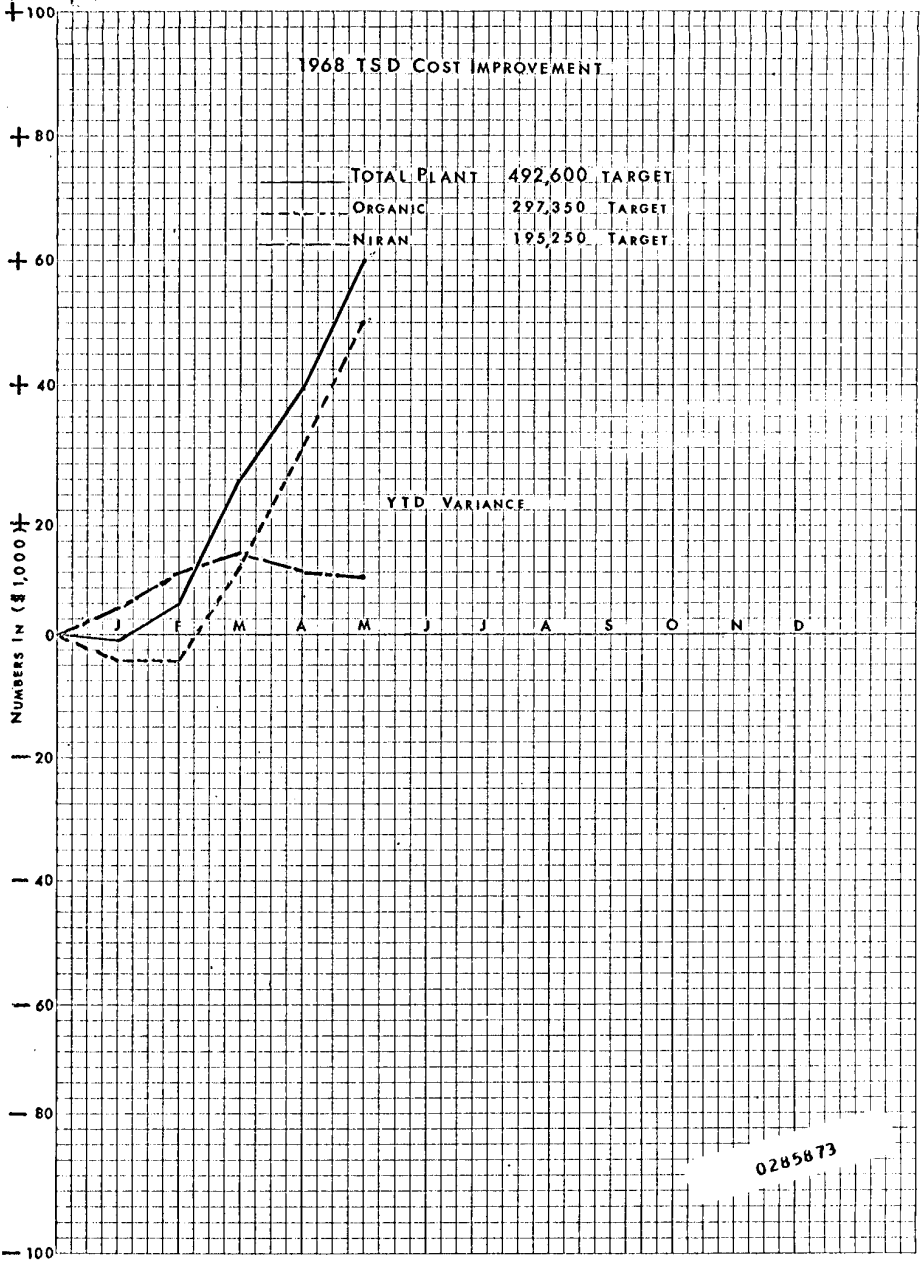


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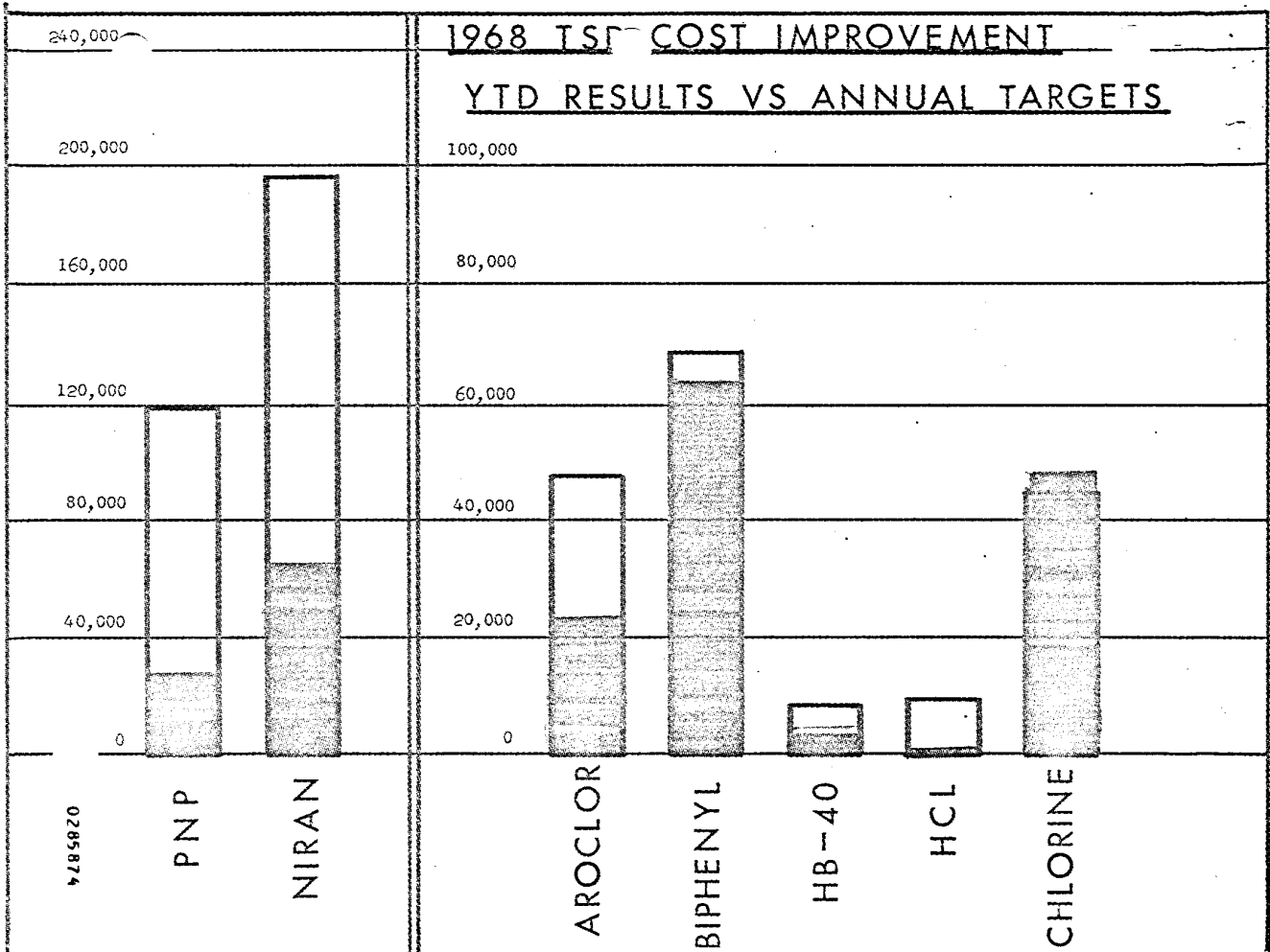
# 1968 TSI COST IMPROVEMENT

## YTD RESULTS VS ANNUAL TARGETS

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AROCLOR - C. R. McIlwain, (V. R. Haupt)

Cost Improvement

VR#

| | Month | YTD |
|---|---|---|
| Target | $3965 | $8300 |
| Actual | $4800 | $23295 |

TSD Objective B-8 (a) Evaluate quaterphenyl polyphenyl effects on solid Aroclor yields by 9/1/68 (new date)

TSD Job No 456 Parcel

Production and TSD agreed to run OMP base 5460 test starting 9/1/68. This is best method of meeting demand of 11.2 M lbs. in next 12 months (starting July) with present 10.0 M lb. capacity department.

TSD Job No 455 Catalyst

Daily analysis of Santowax R in still receiver and Solid Aroclor charge tank started to further verify polyphenyl effect on 5460 yield.

TSD Job No. 849: Solid Aroclor expansion

A Solid Aroclor expansion is needed to meet 1970's forecasted demand. Interim production needs will be handled by:

1. OMP base 5460 (increased yield)
2. Improved Santowax R distillation
3. Minor decreases in chlorinator batch cycle

Details will be set forth in a progress report in June.

TSD Job No. 416: Solid Aroclor still improvement

Project 2324 to install a vertical condenser on the Solid Aroclor still has been completed and demonstrated.

BIPHENYL-SANTOWAX - W. G. Niemeyer, (V. R. Haupt)

Cost Improvement

| | Month | YTD |
|---|---|---|
| Target | $3800 | $19,000 |
| Actual (Est.) | $23,380 | $63,345 |

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TSD Objective B-7 (a) Debottleneck biphenyl stills to 87.6 M lbs./yr. biphenyl rate by 2/69

This work has been included in CEA-1892 as undefined scope for $170 M. The purpose is to have the still capacity match the expanded furnace capacity.

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TSD Objective B-7 (c) Provide assistance (liaison) to CED as necessary on project to up-grade No. 1 Furnace, CEA-1892

Debottlenecking the distillation area has been included in CEA-1892 as stated above. CED is now issuing comment drawings on this project. CED and the plant have agreed to stay with old preheater tubesheet design for the 8 new units on this project to insure cleanability.

TSD Objective B-1 (a) Revise biphenyl-Santowax manufacturing improvement plan by 8/1/68

Target date re-set to 8/1/68. No activity due to liaison work on project to upgrade No. 1 Furnace, CEA-1892.

Quality

TSD Job No. 731 Install 8-tray distillation column on Santowax R still

The 2'-6" O.D. x 18' column was ordered on 5/14/68 from Wyatt Industries. Wyatt estimates shipment can be made in 6 to 7 weeks after receipt of order. Extra effort will be made to expedite installation of this column to gain increased Solid Aroclor capacity.

HCl - K. J. Buturla, (V. R. Haupt)

Cost Improvement

| | Month | YTD |
|---|---|---|
| Target | 300 | 600 |
| Actual | 420 | 820 |

TSD Objective B-10 (a) Demonstrate reduction of unaccounted HCl losses to 10% of total HCl available

Recycle line project drawings completed and reviewed. Design package for project will be transmitted the first week in June.

TSD Objective B-10 (c) Submit AFE for Staley grade acid by 5/15/68

Re-evaluation of HCl "coke scrubber" indicated that it should enable Anniston to produce Staley grade acid. Project AFE 2899 was revised and submitted for approval on May 16. Future work pending approval.

TSD Job No. 497 Muriatic Acid storage

TSD work complete. Design package completed and transmitted to P & S on May 3, 1968.



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HCl - continued

TSD Job No. 841 - Re-route venting system on HCl collection tank

Existing venting system does not control pressure build-up in the collection tank, creating a safety hazard to anyone in the area. New venting system was designed, approved, and transmitted to P & S on May 22, 1968.

CHLORINE - D. W. Dudley, J. M. Jones, (D. C. Malm)

Cost Improvements

| | Month | YTD |
|---|---|---|
| Target | 3300 | 25,345 |
| Actual | 9410 | 46,710 |

TSD Objective B-6 (a) Monitor Mercury usage by radioactive inventories

Second radioactive inventory indicates 143,670 ± 1405 pounds of mercury present in 34 cells for an average cell inventory of 4226 ± 41 lb. Hg./cell. Second inventory compares favorably with first inventory which indicated 4203 ± 59 lb. Hg./cell. Only twenty-seven cells have had two inventories and total mercury inventory is still unknown. Details will be outlined in a June progress report.

TSD Objective B-6 (b) Develop program to reduce Mercury usage to 0.75 lbs. Hg./Ton $Cl_2$ by 2/1/69

All materials for mercury wash tank on order. Installation should be in mid-July.

TSD Objective B-6 (c) Assist in demonstration of Brine dechlorination by 4/1/68

Final revisions to dechlorination system under construction. Plan to demonstrate in June.

Safety

TSD Objective A-18 Design a program and timetable to reduce Mercury level in cell house to 0.05 mg Hg./$M^3$ of air

Weighted mercury vapor level for April was 0.10 mg Hg./$M^3$ of air.



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CHLORINE - continued

TSD Job No. 802 - Brine treatment - (savings - 3500 B.T.)

Project 2854, $10,500 NFC and $3,500 savings, will be submitted for approval in June.

TSD Job No. 328 - Titanium brine heat exchanger - (savings - $2500)

Project 2903, $5,000 NFC and $2,000 expense, submitted to Inorganic Division to cover scope change of project 2496.

TSD Job No. 783 - KCl overflow - (savings $0)

Project 2650, for $4,100, was submitted for cancellation to the Inorganic Division in May.

TSD Job No. 806 - Mercury still - (savings $10,000 est.)

Two test drums of floor sludge yielded 270 pounds of mercury (about 20% mercury). Anniston TSD now working through legal department to negotiate contract with Interstate Concentrating Company for reclaiming of mercury. Other mercury bearing sludges will be investigated for possible recovery.

TSD Job No. 807 - Mercury recovery from waste water - (savings $6,200 B.T.)

Statistical analysis of Hg-Fe column proves recovery technique feasible and the only critical parameter (or variable) is column packing material. Further work will be held up until the legal department investigates possible infringement of Dow patent.

PNP - O. J. Norris, K. J. Buturla, (D. C. Malm)

Cost Improvements

| | Month | YTD |
|---|---|---|
| Target | 14,000 | 48,000 |
| Actual | 18,800 | 27,800 |

TSD Objective B-9 (a) Assist in demonstration of 20 $\bar{M}$ lbs./yr. rate

TSD field studies completed 5/8/68. Statistical analysis of time cycles is in progress. Recommendations to production for reducing reactor cycle time scheduled for 6/4/68. Report on findings scheduled for completion 6/10/68. May production was a record 1.93 M lbs., due mainly to an unusually high on-stream time and no reactor letdown problems.

TSD Objective B-9 (c) EVOP study of molar ratio of NaOH/PNCB - 6/1/68 target

Work will be postponed in this area until debottlenecking recommendations are demonstrated. New target date to begin EVOP study is 9/1/68.



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TSD Objective B-1 (g) Update manufacturing improvement plan by 6/1/68

Work has been delayed due to debottlenecking effort. New target date is 9/1/68.

NIRAN - K. G. Hale, O. J. Norris, (D. C. Malm)

Cost Improvement

| | Month | YTD |
|---|---|---|
| Target | 15,300 | $55,465 |
| Actual | 14,050 | $64,450 |

TSD Objective B-1 Revise Niran long range cost improvement plan by 5/1

Work in progress to revise 1967 plan. New target date is 7/15.

TSD Objective B-5 (a) Demonstrate parathion recovery by 5/1/68. ($70,000/yr. savings + a 10-15% reduction in C.O.D. loading)

Installation complete 5/29/68. Start-up in progress.

TSD Objective B-5 (c) Demonstrate solvent addition to residue (Interim) process by 6/1/68. ($59,000/yr. yield savings)

Yield savings of $6850 were obtained during May production using phase 1 and phase 2 ($N_2$ sparging). Phase 3 (increase $Cl_2$ level) tests were started 5/28. Initial phase 3 tests involve only one chlorinator-still system.

TSD Objective B-5 (d) Evaluate sulfur recovery from residue process by 7/1/68. ($400,000/yr. savings + a 31% reduction in $SO_2$ to air)

Complete package for experimental test facilities transmitted 5/1/68. Foundation, sewer and equipment grounding installation completed mid-May. Remainder of project out for bids. Plant tests targeted for 8/68.

PR&D work continues on the final recovery process.

TSD Objective B-5 (e) Demonstrate reliability of submerged pump for R. I. control of chlorination

Hastelloy "B" submerged pump successfully started-up 5/15/68. Light source in refractometer failed after 6 hours operation. Tests for correlation of refractive index and chlorination level will be resumed after light source has been replaced.



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TSD Objective B-5 (f) Complete design for automatic blending of Methyl Parathion by 4/1/68

Preliminary AFE completed on schedule. NFC requirement is $16,000 with gross savings of $14,800 in reduced lab costs. Project will be forwarded for approval 6/6/68.

TSD Objective B-5 (g) Evaluate Freon recovery by 3/1/68.

Schedule for evaluation remains 8/1/68.

Safety

TSD Objective A-10 Eliminate high $H_2S$ pressure in Thio Acid reaction by demonstrating temperature controlled alcohol addition

Automatic alcohol feed successfully tested on the #3 Thio Acid reactor. TSD responsibility complete until production finishes 1 month test run.

TSD Objective A-11 Reduce personnel exposure to NaPNP-Acetone-Bicarbonate slurry by eliminating pluggage of pump suction line

Complete.

New Developments

1. Evaluate formulation of Parathion blends at Anniston. ($8,500 savings + $9,200 new earnings in 1969)

Preliminary design and AFE to debottleneck formulation facilities completed. No further work will be done on the project per decision by Ag production.

$P_2S_5$ - K. G. Hale, (D. C. Malm)

Cost Improvements

| | Month | YTD |
|---|---|---|
| Target | 0 | 0 |
| Actual | 0 | 0 |

Safety

TSD Objective A-15 (a) Provide design to reduce fumes in $P_2S_5$ working working areas by 4/1/68 at surge tank vent

Drafting started. Transmittal scheduled for mid-June.

TSD Objective A-16 Evaluate improved method to rod-out Phosphorous dip pipes by 6/1/68

Evaluation target moved to 9/68. Recommendations will be made prior to October. Changes can be made during Niran turnaround in October.



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## ENGINEERING DESIGN AND SERVICES

Mechanical/Electrical/Instrument Design - J. C. Price, J. A. Veazey, G. C. Goodwin, R. L. Brewer, (W. F. Taffee)

### Highlights

Utility maps for the Plant Emergency Plan were completed. Preliminary, final and/or revised drawings were issued for increased capacity for Parathion formulations, Extension of Fire Protection Valve FV313, installation of Ozalid machine, HCl recycle line, storage rack for chocks and Blue Track Flags, and drainage at HCl unloading dock. Design package for Project 2019 - Alarm for #4 Blow Tank was transmitted. AFE 2898, additions to Service Building, was completed, verbal approval obtained, and the project was turned over to a local architect for preparation of drawings and specifications. Design for High Level Cut-off on Niran Item 403 was completed. Study for elimination of Brine from storm sewers was started. Preliminary estimates for plant emergency radio communications and automatic blending of Methyl Parathion were completed. AFE 2906 - Drainage at HCl Unloading Dock was forwarded for approval. Consulting and/or drafting and/or liaison services were provided for sixteen (16) other jobs during the month.

### OBJECTIVES

There has been no change on the status of objectives except those reported below.

TSD Objective A-7 Plant Emergency Plan

Utility maps and tests on the existing radio equipment were completed. Portable loud speakers were received. AFE's 2873, 2874 and 2875 to install emergency lighting in the main office, service building and building 28 were approved and have been scheduled for drafting in August. Rough draft of AFE to provide additional radio equipment has been completed. The project will not be forwarded for approval until Norman Bach, Radio Communications Manager, reviews the entire emergency radio communications plan early in June.

TSD Objective A-8 Mechanical guarding task force

All inspections have been completed and recommendation forwarded all plant departments. Final report will be delayed until meeting with the plant manager can be arranged in June.

TSD Objective A-14 (a) Determine need to upgrade interlocks on critical vessel in Parathion department

Report has been completed and will be issued as soon as typing is completed.

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TSD Objective D-1 Update plant maps twice a year

Updating of maps completed in May.

TSD Objective E-7 Instruct draftsmen in simple structural design

Four (4) sessions held in May. Six (6) more sessions required to complete course. EDC now 8/1.

TSD Job No. 824 Upgrade loading docks C. R. McIlwain, (W. F. Taffee)

Evaluation and cost estimate for loading/unloading docks in Inorganic and Ag Division were prepared. Project for Inorganic department will be $5000 NFC, maximum. Cost for Ag Division upgrading will be $12,000 NFC and $9000 expense, maximum.

Projects will be reviewed with appropriate TSD and production personnel in early June.

CED LIAISON - V. T. Langdon, (W. F. Taffee)

CEA 1430 - Aroclor Expansion

Storage tanks set, structural steel erection in Tank Farm area underway. Reviewed tie-ins to existing department with CED personnel - objective to minimize Aroclor Department downtime. Further work required will be handled by Lamar Faulkner, start-up supervisor. Safety review for Tank Farm held May 16.

Critical flaking, packing, drumming area remains as the one area in which important details have not been resolved. Start-up budget forwarded to TPM for approval May 28. Start-up plans will be prepared by Lamar Faulkner.

CEA 1452 - Warehouse

Warehouse office framing being erected, warehouse foundation being poured. Heavy rains in mid-May plaguing construction. Estimates covering recommendations of safety review will be forwarded in June. Start-up budget to be prepared and forwarded for approval by June 22.

WASTE HEAT RECOVERY - C. E. Woodward, (W. F. Taffee)

Computer analysis of Therminol loss data indicates Therminol loss primarily dependent on Therminol tower exit gas, temperature and boiler upset frequency.

Detailed design drawings were circulated and a preconstruction safety review held May 9. Design package transmitted May 10. Field work on modifications began May 28.



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Tentative boiler related targets established by review with John Buss and Harold Hileman. Targets for phase III testing will be formally set in St. Louis review with Central Engineering and Division Development personnel on June 7, 1968

POLLUTION CONTROL - E. G. Wright, (J. C. Landwehr)

TSD Objective F-6 Continue annual program of biological survey of Choccolocco Creek

Biological consultants completed survey of Choccolocco creek in late May. Report should be issued in June.

TSD Objective F-3 Establish a monitoring system for air effluent from the plant

Equipment is in the plant and will begin sampling for $SO_2$ as soon as equipment is assembled.

TSD Objective F-7 Investigate installing permanent monitoring device on Choccolocco creek

Located several sites on Choccolocco creek. Discussed locating a sampler on some private property. Property owner talked favorably. This will be evaluated further when state begins to sample creek.

TSD Job No. 808 Install solids removal equipment at Waste Treatment

Drafting priority on this project has been moved up. Scheduled for drafting to begin on 6/5/68.

TSD Job No. 816 Install adequate drainage at soda ash slurry tank.

No change.

TSD Job No. 707 Install Trebler sampler on Parshall Flume

No change.

Special activities

1. Began study of HCl neutralization pit to determine its effectiveness.
2. Discussed Malathion waste pilot studies with Mike Batz and R. A. Yoder (CED).
3. Began checking Snow creek for C.O.D. and organics. This data is being gathered for P. B. Hodges so that CED can do some preliminary calculations for providing secondary treatment for all effluents.
4. Attended 23rd annual Purdue Industrial Waste conference at Purdue University on May 6, 7, 8, 9.



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PROCESS AND QUALITY CONTROL - J. P. Chadwick, (W. B. Dunlap)

TSD Objective 11-C (2) Apply statistical control to solid Aroclor chlorination

New surveillance on Santowax composition was set up for monitor polyphenyls at the still receiver and Aroclor 5460 weigh tank. Decisions were made on statistical procedures and data system, and on process variables. Pat Chadwick accepted specific responsibility - target date revised to July 19.

TSD Objective 11-C (7) Hold statistics seminar

This objective has been altered to cover plant-wide training of technical personnel on the Olivetti-Underwood computer; to be accomplished by 10/1/68. The computer is on order, with delivery expected by July 1.



TOWOLDMON0044299

## PERSONNEL, RECRUITING, COMMUNITY RELATIONS, AND VISITORS

### Personnel

1. K. G. Hale attended a short course - "Communicating Effectively in Engineering" - University of Wisconsin, 5/1 - 5/3.

2. D. C. Malm attended Kepner-Tregoe Apex course in St. Louis, 5/13 - 5/17.

3. S. O. Kemp was recognized for outstanding contribution for the 1967-1968 session of the Anniston Area Industrial Management Club.

4. The second quarter training session for all lab employees was held 5/5/68. Pollution Control Analysis was the topic of discussion.

5. G. W. Miller consulted with Ag Research on formulation of parathion 5/17/68.

### Recruiting

1. The following people have been hired for summer employment in TSD:

| Name | School | Reporting to |
|---|---|---|
| Clarence Angelette | Jacksonville State U. (Instructor) | G. W. Miller |
| Pat Chadwick | U. of Mississippi (Ch. E. Junior) | W. B. Dunlap |
| Joe Gaines | U. of Auburn (Ch. E. Junior) | D. C. Malm |
| Allen Hale | U. of Mississippi (Ch. E. Junior) | W. F. Taffee |
| Earl Poore | Jacksonville State U. (Instructor) | G. W. Miller |
| Dann Self | U. of South Carolina (Ch. E. Senior) | V. R. Haupt |

2. Messrs. Fred L. Rupel and Justin R. Russell visited for personal interviews to fill the Senior Process Research Chemist opening.

### Visitors

1. R. A. Yoder and M. E. Batz, C.E.D. - 5/21 - discussion of plans to make Malathion waste tests at Anniston.

2. C. H. Russell - 5/13 - discussion concerning custom parathion formulation operations.

3. R. W. Peterson, C.E.D. Project Manager for the Aroclor expansion project - 5/15 and 5/16.



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Visitors (continued)

4. B. B. Hedleston, C.E.D. Project Manager for the Warehouse project - 5/15, 5/16, and 5/17.

5. Bill Das, C.E.D. Mechanical Engineer, and Rich Gordon, C.E.D. Draftsman - 5/9, 5/10, and 5/11 - to review piping problems associated with tying in the Aroclor expansion project.

6. D. Hinton, C.E. D. Engineer - 5/16 and 5/17 - to study dust collection problems associated with Aroclor and Biphenyl flaking (a part of CEA 1430, Aroclor expansion).



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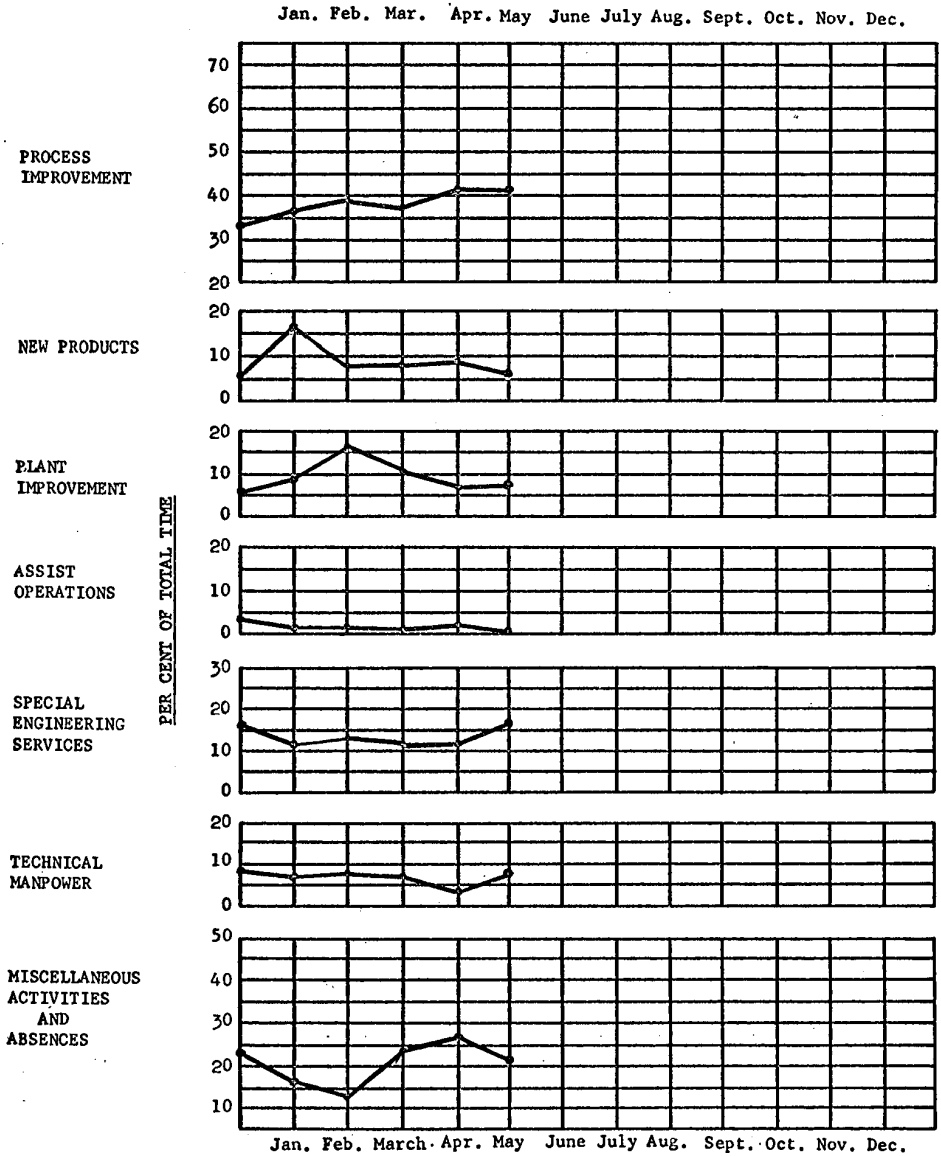
## DISTRIBUTION OF TIME BY TECHNICAL SERVICE

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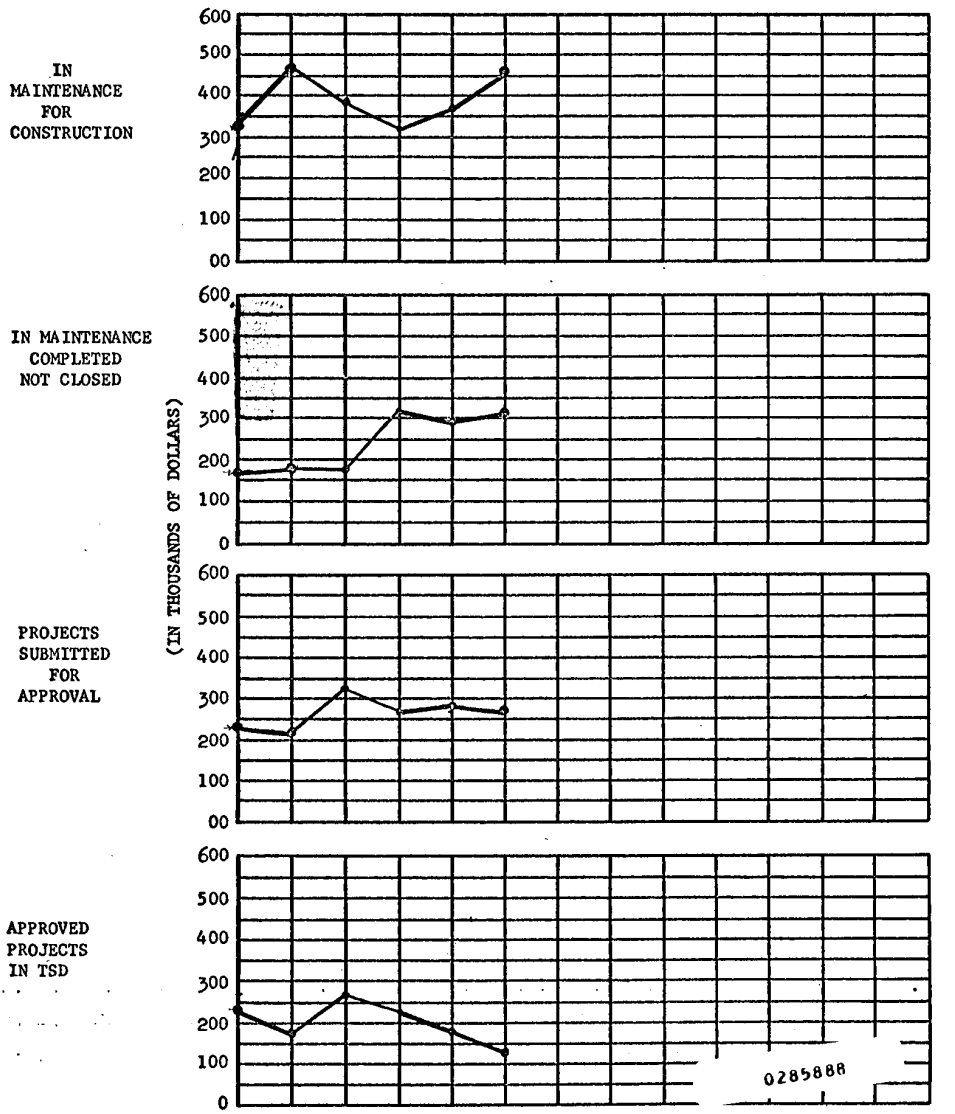
TSD PROJECT SUMMARY

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